AMPED SOFTWARE

Amped FIVE

Product Information Guide

September, 2014 Edition

AMPED FIVE

Forensic Video Enhancement Software

- ✓ Load images and videos in any format
- ✓ Convert proprietary video to standard files
- ✓ See license plates, faces and anything else better
- ✓ Automatic generation of a detailed report documenting the scientific methodology used

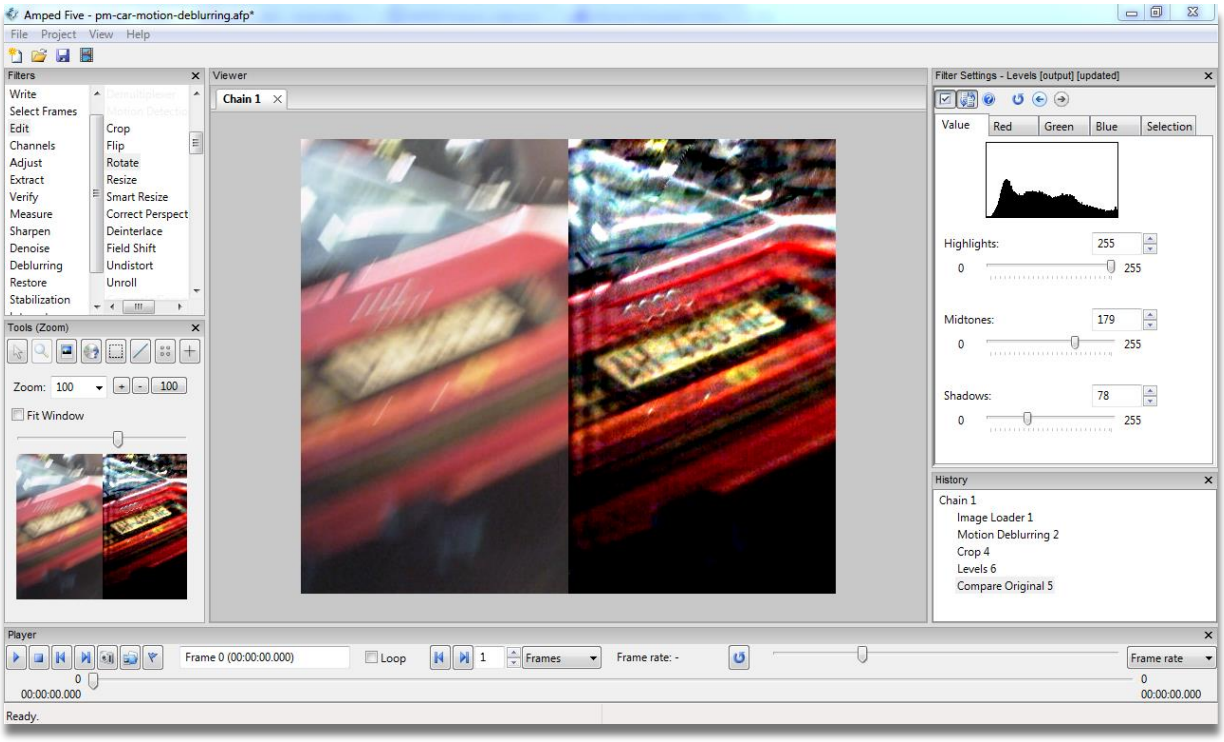
Amped Five is the most complete software for enhancing and analyzing images and videos during investigations. A single tool to analyze crime scene photos, enhance surveillance and intelligence video with a workflow compatible with forensic needs.

Amped FIVE: forensic video enhancement software

Amped FIVE is the most complete image processing software specifically designed for investigative, forensic and security applications. Its primary purpose is to provide forensic investigators a complete and unique solution to process and analyze digital images and video data in a simple, fast and precise way.

Through processing and analyzing both still and video images, then utilizing a clear workflow to present evidence that withstands the scrutiny of the courtroom, Amped FIVE is the forensic professional's trusted partner. Amped FIVE provides tools for solutions to a wide range of problems which are otherwise easily missed.

Since FIVE is self-contained, it can help to dramatically reduce the time required to process data and improves the success rate of various cases, from the restoration of low quality CCTV video to fingerprint analysis.



A new and better way to handle video evidence

"Today, I may have 25-30 cases to process. Tomorrow, I may have 25 more. With FIVE I can quickly determine, in a matter of minutes, which video evidence is usable and which is not. This way I can spend my time on the video evidence where I can get a result and not waste hours working on dead ends."

Jim Hoerricks, Forensic Video / Image Analyst

Maintaining the original evidence integrity is a key element in the design of Amped FIVE. In the law enforcement arena, courts, judges, prosecutors, and defense attorneys can sense the weakness of evidence and exclude it if there is even a hint that any manipulation that has been done. The current judicial trend for admission of digital evidence shows that undocumented or modified files have a strong chance of being excluded; as do many files that have been worked on with photo editing software without full documentation of steps and validation of the process. If this is the key evidence in a case, the case is likely to be lost.

With FIVE, our core philosophy in designing the product is that everything is done by simply applying a filter. This means that no re-rendering, no modifying, no altering and no disturbing original evidence. Whether you are loading a video, exporting a sequence, applying some denoising, selecting frames, taking measurements and so on; this concept of filtering allows for very fast, elegant, and predictable workflow.

For each step in the process, every filter takes as input the image or video generated by the previous filter and, after the processing, passes the result to the output filter. You can even modify a filter and see the real time output effects on another one down the chain. In this way you can see how modifying some values on a previous filter will modify the final result. This is very effective especially for complex problems and long chains of filters.

Trial and error is often the most common scientific method that is applied in forensic analysis. Experimenting with different filters and settings is done to find the right filter group, settings, or combination of steps to correct unique problems. With most other forensic image processing software, this is a very long process that often must be restarted if one filter has to be changed or results are not optimal; then restarted again should the results of the second (or third or fourth, etc) result prove to be less than ideal. We have designed the architecture of FIVE with this in mind. Reviewing and modifying any step of the processing is as quick and easy and as simple as replacing, deleting, turning off, or moving filters anywhere in the chain. In this way FIVE guarantees speed, effectiveness and scientific methodology.

The complete workflow

Analyze. Restore. Enhance. Certify.

FIVE is not a simple one-click video enhancement tool with limited settings or just a plug-in for standard commercial photo editing software. It's a complete software solution that addresses any possible need in the analysis of images and videos for investigations, surveillance, and forensic applications. For the forensic investigator, FIVE can make quick work of any video or image; from importing and converting the footage, analysis of its format, clarify content, taking measurements of the crime scene, and then generating the technical report that you will bring to the courtroom.

1. Import any type of image, video or sequence of images. With many proprietary file types, you can convert the file to a proxy version with our proprietary file conversion tools. If the video is an unsupported proprietary DVR format we can easily import it in FIVE with no loss of quality (uncompressed/RAW) with the new DVR capture tool.

2. Analyze specific details of your images (like EXIF metadata) and your videos (like video codec and encoding type of every single frame).

3. Speed workflow on long videos by locating the frames of interest with the new motion detection and select only the useful ones either in an interval or in random positions.

4. Process the frames utilizing more than 70 available filters in unlimited combinations, in order to restore specific defects or clarify image features.

5. Take specific linear and 3-dimensional measurements on images or video frames.

6. Save the result of the processing as an image, a video or a sequence of images or frames. You can even show side by side every original frame with its enhanced version to illustrate your work for presentation purposes. You can even save snapshot images of steps with one click.

7. Automatically generate a report containing the scientific methodology of the processing and all the processing steps. The report provides the scientific references for each filter used, the settings, and specifics to that particular frame or image. This reporting feature is extremely valuable for US users in Frye or Daubert states.

Applications

Designed by forensic professionals for forensic professionals.

Our team has worked with images and videos evidence several hundred forensic cases for law enforcement, courts, lawyers, private investigators and Public Prosecutors. With this experience, we designed FIVE to work reliably in the widest range of situations. In fact, thanks to its intuitive interface, it is not only used by specialists working in national law enforcement and intelligence agencies in many countries, but also local police, municipalities, court experts and private companies working in the surveillance and forensic fields.

Amped FIVE for law enforcement

The most common application for law enforcement is to use FIVE to improve a surveillance video output from CCTV taken at a crime scene in order to see a face, a license plate, or anything that can be useful for investigations. Amped FIVE offers many intuitive tools to enhance and clarify video and images; plus document scientific methodology used to get the results.

Amped FIVE for court experts

You need to improve your video or images and use the result as evidence. You can do it because Amped FIVE allows you to automatically and completely document the employed filters from a scientific point of view.

Amped FIVE for military and intelligence agencies

Whether you need to stabilize a full motion video surveillance feed in hostile territories, or enhance surveillance images through fog and sandstorms, Amped FIVE is the solution. Amped FIVE can be installed on any standard PC, so it can be deployed quickly in any environment. We offer special versions for military use, please contact us for details.

Amped FIVE for crime scene photos

FIVE has the right tools to take measurements on the pictures taken from the crime scene or to see them better. FIVE offers the crime scene investigator a complete set of tools in one easy application.

Amped FIVE for biometrics

Amped FIVE can help you to improve fingerprint image quality and measure height of subjects from images. FIVE offers one solution to solve a multitude of problems.

Amped FIVE for research

Amped FIVE is used in several universities and research institutes as a simple and fast way to enhance images and video with its wide selection of filters. Amped FIVE is also part of the curricula at the best universities where the next generation of forensic investigators is trained.

Samples

Because a picture is worth a thousand words.

Improve a dark scene

Adjust the contrast of a scene

Correct the perspective of license plate

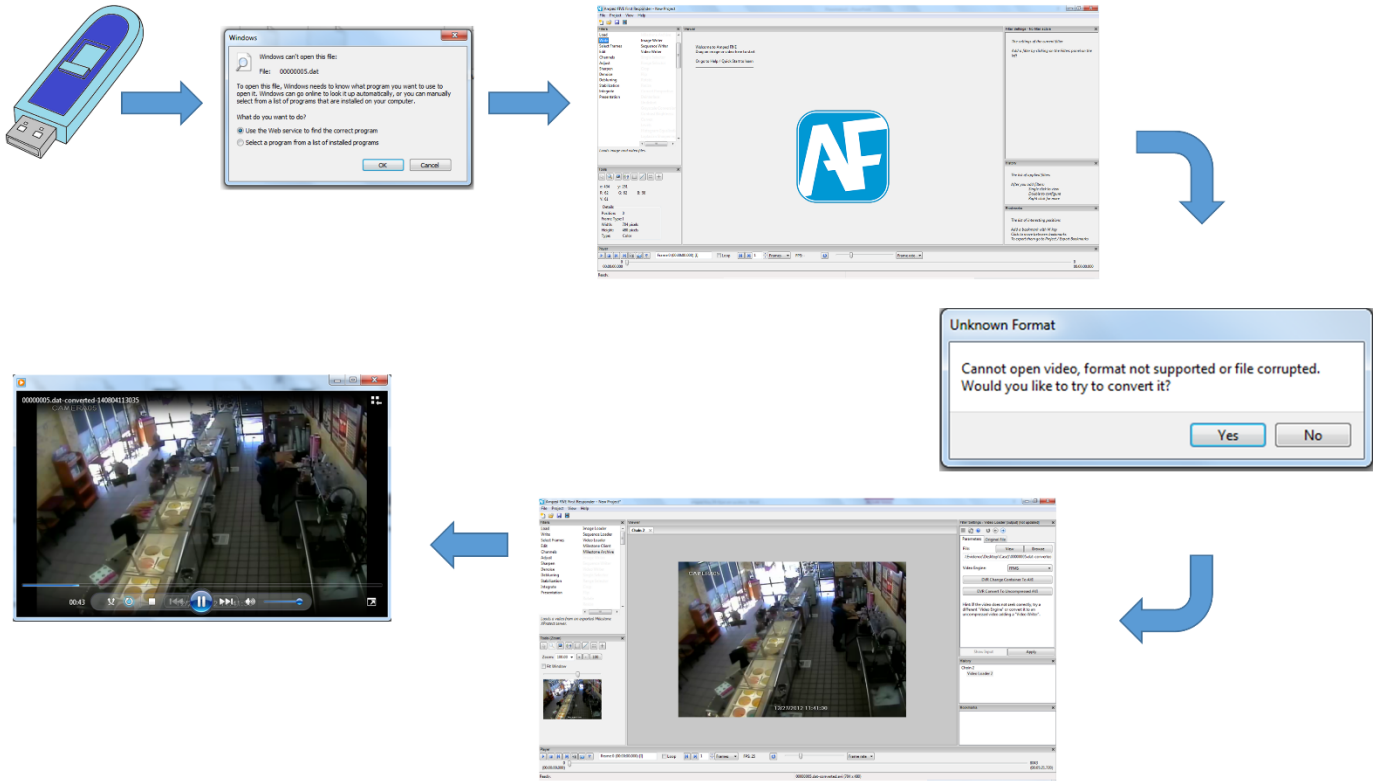
Correct the blur of a moving car

Measure the height of a subject

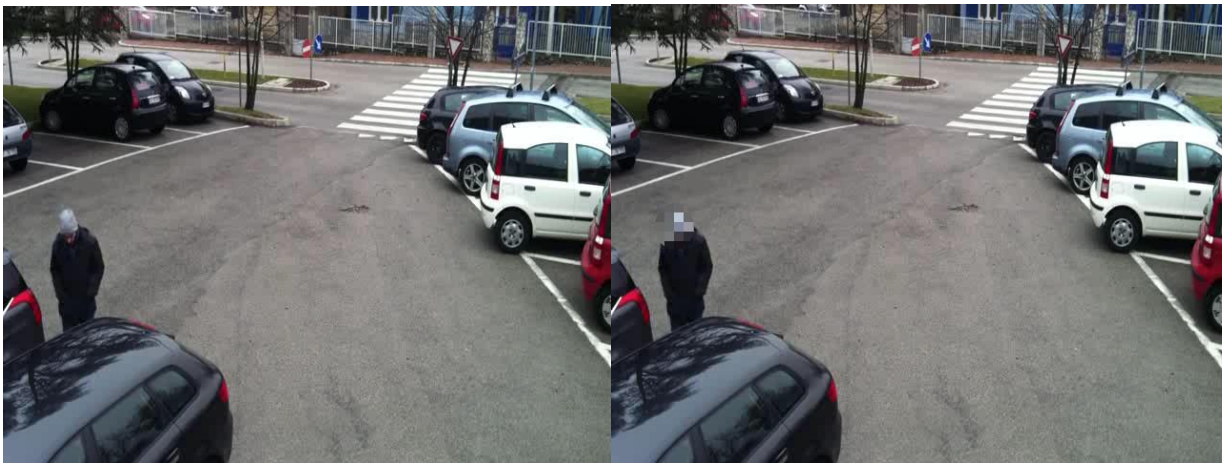
Or something in the environment

Enhance video feeds due to environmental conditions and ambient weather

Conversion of Proprietary Video File Formats


Windows
Windows can't open this file:
File: 00000005.dat
To open this file, Windows needs to know what program you want to use to open it. Windows can go online to look it up automatically, or you can manually select from a list of programs that are installed on your computer.
What do you want to do?
Use the Web service to find the correct program
Select a program from a list of installed programs
OK
Cancel
Unknown Format
Cannot open video, format not supported or file corrupted.
Would you like to try to convert it?
Yes
No

Redaction of Sensitive Subject or Object in a Video



Please visit our page http://ampedsoftware.com/samples to see some more samples of processing.

Features

50 things you can do with FIVE.

1. Load, save, process, and analyze single images, sequences of pictures, or videos from a VMS or external source using the same methodology and software.
2. Instant results: add, configure, move, and modify an unlimited number of filters, in real time during video playback.
3. Automatically apply the same filters sequence to different files to avoid resetting all filters for different images from the same source or environment.
4. Apply the filters only to a region of interest of the image, or select frames of interest in a sequence.
5. Quickly seek for events in a long duration video with the integrated motion detection filter.
6. Automatically remove duplicates or mismatched frames.
7. Automatically de-multiplex multi-camera video feeds.
8. Flexibility with technology: choose between classical standard techniques or latest state-of-the-art algorithms.
9. Precise control over images: operate with pixel level precision on selections and measurements on images. Most of the filters can work on the whole image, on a static selection or can automatically track a moving target.
10. Crop quad multiplexed videos.
11. Document evidence that wins: Amped FIVE can automatically generate detailed reports (in .doc, .pdf, or .html formats) so that the investigations process is clearly documented. The report documents scientific methodology and includes all the technical details of the processing and relevant frames and processing steps selected by the user. This is something mandatory for Frye or Daubert states in the United States
12. View original and processed image or video side by side to easily show the results of your work.
13. Fast redaction tool to hide sensitive details in the video by blurring, darkening or pixelating selected areas – even while moving.
14. Highlight sensitive details in the video blurring, darkening or pixelating selected areas.
15. Load image files from the most common formats, such as bitmap, jpeg, tiff, targa, jpeg2000, png.
16. Load video files from almost any digital format, sourced from NTSC, PAL and almost any other system such as mobile phones and internet content; users can decode most video formats by using internal libraries and codecs.
17. Amped FIVE's complete internal library allows decoding even if your system does not have the required codecs installed.
18. Choose the video decoding engine to use for every single file. FIVE is the only tool which integrates all video frameworks available on Windows (DirectShow, Video for Windows, QuickTime, FFMS, FFMPEG).
19. Visualize the type of encoding of the current frame (I, P, B).
20. The customizable player allows to define personal frame step for faster seeking or to use the mouse wheel as a jog control.
21. Process a live feed from any DirectShow compatible device.
22. Amped FIVE is the only video enhance system integrated with VMS systems. For Milestone XProtect users, FIVE allows to process live stream, archived video or exported files in native format without any conversion or quality loss.

23. Convert proprietary video files to a standard, viewable format.
24. For unsupported proprietary DVR formats, FIVE integrates a very easy tool that allows to capture the screen without any loss of quality.
25. Convert a sequence of static images to present and control as if it were video. Transcode video to a different format or transform it into a sequence of images or vice versa.
26. Multiple video frames may be selected in either a consecutive or random sequence.
27. FIVE is secure. You can easily check for unauthorized modifications by verifying the file hash-code to maintain strict evidence handling procedures to avoid contamination that could lose a case. You can also verify image EXIF and hash-code data.
28. Standard image editing features allow the user to instantaneously apply basic editing functions such as crop, flip, color to grayscale conversions, channel extraction, zoom and image rotation.
29. Correct geometric distortions caused by wide angle lenses. Amped FIVE also allows the user to convert images taken from an omnidirectional camera to a panoramic format.
30. Correct the perspective in order to see the picture of the scene from a different angle.
31. Resize the image with advanced algorithms, which ensures a higher definition than would be obtained with common interpolation algorithms used in other software.
32. Convert an interlaced video into a progressive one without loss of information.
33. Shift the fields of an interlaced video to better view moving objects.
34. Improve contrast and brightness manually, adjusting intensity curves, or speed workflow with automatic enhancement algorithms.
35. Analyze images with various threshold and edge detection filters.
36. Measure real world distances, heights, and lengths from images or video frames using FIVE's advanced measuring tools. You can also determine camera height as a cross-check of measurement accuracy.
37. Improve image details (unsharp masking, laplacian sharpening).
38. Reduce noise (averaging, Gaussian, median, bilateral, Wiener smoothing filters).
39. Apply custom kernel filters.
40. Reduce compression artifacts with our de-blocking algorithm.
41. Remove interferences or image background (such as banknote watermark) with Fourier filter.
42. Correct optical and motion blur resulting from fast movement or out of focus video.
43. Correct the blur caused by air turbulence on long range surveillance videos.
44. Remove noise from a video with temporal smoothing and frame integration.
45. Improve shaking video with local or global image stabilization.
46. Correct and modify the camera viewpoint in different frames with perspective alignment.
47. Improve the resolution of the frames with a super resolution algorithm.
48. Improve a video with bad weather conditions (fog, rain, flat light, sandstorm, etc.) and improve backlight images.
49. View 360° dome camera images as panoramic.
50. Export all frames as a PDF in one easy step.

Amped FIVE – The New Standard for Forensic Image and Video Analysis

Amped FIVE continues to expand and evolve from our first version that was released in 2008. In the past few years, we have more than tripled the capabilities with new features and usability improvements that again push forward the technology. While some companies have not posted an update with new features in more than four years, we are very prolific and often add new features monthly.

We announce our newest features regularly on our blog: http://blog.ampedsoftware.com

Some General Features and Tools:

- ✓ Proprietary video format conversion tools: Covert proprietary files to either a standard AVI or uncompressed AVI. Around 70% success rate as of September 2014.
- ✓ New uncompressed DVR Screen Capture tool for capturing without any loss of quality proprietary video formats.
- ✓ Expanded reporting tool that provides the user the ability to generate a report on a project in either Word Doc, PDF, or HTML formats. Reports meet both Frye and Daubert state (USA) evidence rules and provide all filters and settings applied, as well as scientific references for algorithms used. This meets even the most stringent California Evidence Code and the 2015/2016 guidelines for forensic science from NIST and NIJ.
- ✓ User Extended integration with Milestone systems. Now FIVE allows work on native Milestone export format (PQZ) and newer (XML) as if it was just a standard video file. No further exporting and conversion is needed, thus ensuring the maximum available quality.
- ✓ Most of the features of the software can be applied by quick keyboard shortcuts. They have been carefully chosen to match common combinations used by commercial software and common video editors. This eases user adoption and dramatically shortens the learning curve.
- ✓ You can the use mouse wheel to zoom in and out on the image or to easily move frame by frame in a video.
- ✓ You can modify the parameters of a filter and see how the new configuration changes the output of a subsequent filter in another position.
- ✓ The filters configuration panel has been embedded in the right side bar for a more comfortable use.
- ✓ The filters selection tool has been completely redesigned to accommodate the room far a wider collection of functions.
- ✓ An even richer collection of samples.
- ✓ The possibility to add bookmarks pointing to special frames of interest of steps of the processing, in order to quickly move about them.
- ✓ Bookmarks have editable name and description and their images are included in the processing report.
- ✓ Visualization of frame type in videos (I, P, B).
- ✓ Export all frames as a PDF in one simple step.
- ✓ Most of the filters can now be applied globally, on a static region of the video or tracking a target, either with static (more precise) or dynamic (more robust) reference update.

Some exciting recent changes and new features:

- ✓ Proprietary Video Conversion Tools: If FIVE's player cannot play a file, you have the option now of converting it to a standard format.
- ✓ Both 32 Bit and 64 Bit versions install. (64 Bit version is dependent on 64 Bit OS installed)
- ✓ Video Input: process a live stream coming from any DirectShow compatible device.
- ✓ Align Fields: filter to modify the relative alignment of the two fields in an interlaced image.
- ✓ Levels: better control with integrated histogram view.
- ✓ Color Deconvolution filter to select the color you are interested in viewing clearly (like to separate out layers of graffiti, etc.)
- ✓ Send images from Amped FIVE to Word and PowerPoint.
- ✓ Histogram Equalization and Contrast Stretch allow the optimization of a specific region of the image.
- ✓ Saving reports in PDF and DOC, as well as the current HTML format.
- ✓ New modes for Motion Deblurring when there is a replica effect.
- ✓ New Nonlinear Deblurring to use when motion is not linear.
- ✓ A new CLAHE (contrast limited adaptive histogram equalization) filter.
- ✓ Load Subtitles to view the exact timestamp printed on the video, if they are encoded as *.smi* or *.srt* files.
- ✓ Write Timestamp filter to manually add back the date and time information so you can quickly locate events of interest at known times.
- ✓ Channel Mixer filter to mix the ratio of colors in each channel. Especially valuable when working with handwriting, scanned documents, and fingerprints.
- ✓ Remove Duplicates: delete duplicated frames caused by wrong capture frame rate.
- ✓ Auto Selector: delete incongruous frames, for example after an unsuccessful stabilization.
- ✓ Demultiplexer: separate different camera streams saved in the same video file.
- ✓ Motion Detection: quickly locate events of interest in a video.
- ✓ Color Conversion: converts the image from grayscale to RGB.
- ✓ Color Switch: exchanges R and B color channels in the image.
- ✓ Mix Channels: displays only selected color channels.
- ✓ File Info (EXIF Data): saves image metadata in the report.
- ✓ Bilateral Filter for denoising highly optimized.
- ✓ Median Filter ha new options, like cross shaped and directional versions.
- ✓ Wiener Filter has been added for a very efficient image denoising.
- ✓ Turbulence Deblurring: corrects the blur caused by air turbulence and light mirage in long range videos.
- ✓ Super Resolution: merges all frames to improve the resolution of the image.
- ✓ Hide Selection: Redaction tool pixelates, darkens or blurs an area of interest in a video (witness or sensitive area protection).
- ✓ Compare Original: juxtaposes or overlays the original and enhanced image for comparison.

Amped FIVE Unique Advantages

Why choose FIVE over other solutions? It is the best tool for your job.

1. FIVE is a single complete set of tools designed from top to bottom for forensic and security professionals: all needed functions in one software package for both static image and video. FIVE is not a plugin for commercial photo editing software or a bloated video editor that is difficult to use. FIVE is the first 21st century product suite designed specifically as a tool for ***your*** job: it has all the features you need and none that you don't.

2. Automatic report generation, including the sequence of all operations applied to all files, the used parameters and a detailed description of their usage and implementation, plus the images of most important frames or processing steps chosen by the user. In the United States, if you are in a Frye or Daubert state, this is one of the most important features in FIVE when evidence goes to court since it is an automatic documentation of scientific methodology used.

3. FIVE is fast. With our workflow design, you can apply filters in any unlimited sequence: drag and drop, add, delete, modify, move, copy, paste, etc. You have the ability to modify any parameter of any operation in any order; the results can be seen immediately. With FIVE, everything is done in real time to dramatically reduce time and effort. This can be done even while playing a video file or viewing a live feed.

4. FIVE is high performance. FIVE has tools to target any type of data, from CCTV recordings and dash cam video to crime scene digital photos and latent fingerprint enhancement. With one uniform user interface, you can work in the same way with single images, sequences of images and videos.

5. Support for any image and video format without additional expensive format tools and configuration filters. FIVE is ready to work, straight from the box, and will work on your current workstation, laptop, or PC. If we do not have the native codecs to play the video file, no problem! We have a built in utility to capture video from the DVR console or player quickly and easily. We are also directly compatible with Milestone® and a few other high end video management servers. FIVE supports conversion of most proprietary video files to a viewable format. That is a solution to 70% of what gives everyone the most trouble.

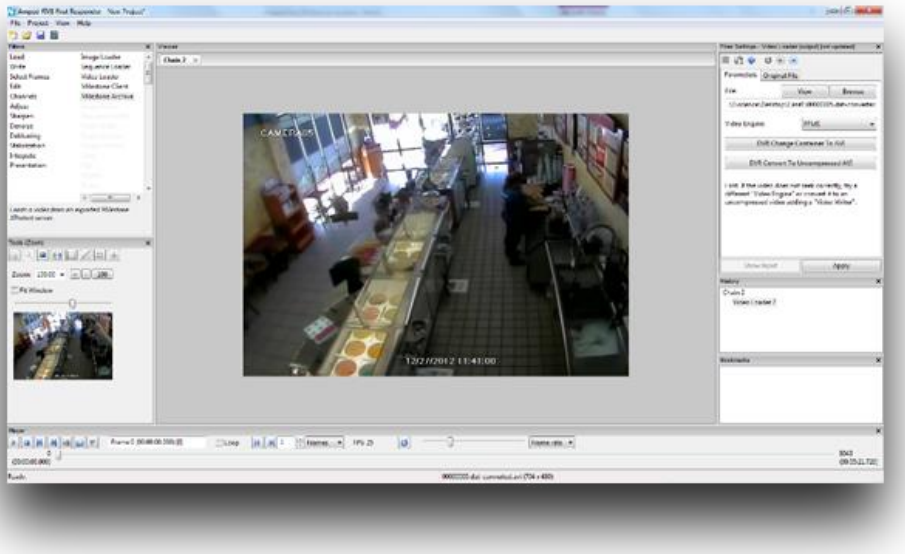
6. With more than 70 different filters included as standard to enhance and analyze images and videos, FIVE is both budget friendly and a complete package. FIVE does not require additional plug-ins or third party software.

7. FIVE has features you can't find in any other software: choice of multiple video decoding engines, integration and compatibility with some high end surveillance video management systems, alignment of images taken from different perspectives, deblurring of long range videos affected by air turbulence.

8. Built-in security and robust file authentication to detect any tampering or unauthorized modifications or changes so that all evidence is secure.

9. Available in multiple languages (English, Spanish, French, Italian, Chinese, Polish, others available soon).

10. FIVE will work with your platform. Because FIVE is compatible with standard PCs (Windows XP, Vista, Windows 7, 32 bit and 64 bit versions), the time and cost to deploy are minimal. As hardware standards change quickly, FIVE does not bind you to a platform that will soon be obsolete or cannot be upgraded without major expense (if at all). Amped FIVE shows a clear advantage over competitors in cost effectiveness in budget analysis based on total life-cycle cost.



Testimonials

What the experts say:

Amped FIVE is currently used by law enforcement agencies, military units, expert witnesses, and public and private forensic labs in most of European Countries, in the Unites States, Asia and Africa. Here you can find some feedback we received from our customers.

"I think that Latent Print Examiners will love the program. I think that novice image / video analysts will love the program. I think supervisors will love the program. I like the fact that certain things are easily done in Amped FIVE: Deinterlacing Video, FFT, Image Corrections. I absolutely love the reporting feature." (full article)

Jim Hoerricks, Forensic Video Analyst at
Forensic Analysis Associates and author of Forensic Photoshop book

"Amped FIVE has brought the key clarification tools for both video and still images into a single package that is both fast and impressive. Whether one needs to deblur a single image or stabilize a video, it can all be done with the same application. The interface is different, but very intuitive, enabling users to be up and running in a very short time. Although I have many tools in my image processing toolbox, I have added FIVE and am using it often."

George Reis, Forensic Image Analyst at
Imaging Forensics and author of Photoshop CS3 for Forensics Professionals

"As the director of the Laboratory of Video Documentation of the Italian Scientific Police, every day I work with images coming from video surveillance systems from all of Italy. Our main need is to enhance and analyze video is to use recorded content for evidence in court; but unfortunately, the original image is often too low in quality or has too many defects to be used as it is.
For several years now, we are using the software AMPED FIVE; which has proven that in the vast majority of cases, allowed us to get results useful for the further usage in the courtroom. I can express great satisfaction with this software, especially in relation to its versatility, which guarantees to give the user all the functions needed to get the best results."

Michele Mininni, Directory of Video Documentation Laboratory
Italian Scientific Police, Ministry of Interior.

"I have never experienced a software package this easy to learn but yet so powerful. The secret is that everything can be done from one interface. I hesitate to employ the most overused term around town, WORKFLOW, but Amped allows the ultimate in logical workflow flexibility."

Kent Gibson, Media Professional and Court Expert Witness
Forensic AV

"The wide range of advanced features (filters, measuring tool, and so on) and the forensic oriented utilities (has code calculation, automatic report generation...) is why we chose AMPED FIVE as an integral part of our curricula for students of the Computer Forensics course of the University of Catania (Italy). Our program provides students with the possibility to test the potential of the software on real and simulated cases; which has proven valuable in training the forensic scientists of the future."

Prof. Sebastiano Battiato, University of Catania
Mathematics and Informatics Department

"We have been using FIVE for about two years. There is a wide range of functions and filters in one single software package and it's very easy to work with them. I have saved a lot of time in cases when I had to convert images to video that can be done only by "drag and drop" function. I also have very positive experience about technical support and suggestions from the "FIVE experts" (Amped company), which is very important in urgent situations."

Tomislav Prijanovič, Forensic Expert
NFL (National Forensic Laboratory), Slovenia

"I think that it is perfect software for the investigation of questioned material in several aspects - first of all it expands the possibilities of image examination, especially performing work with a sequence of images. But it should be mentioned that there is no limits for the further development!"

Kestutis Grazelis, Forensic Expert
Forensic Science Centre of Lithuania

"In relation to my activity with the Judiciary Police and the very important cooperation with the Local Police who are exploiting urban video surveillance; nowadays an indispensable tool for investigations, we strongly needed software that allows us to use filters to enhance the images. After several evaluations of other products available on the market, our agency opted to purchase AMPED FIVE. This step has allowed us to use this software to make clear images and/or details that led to solving several cases and the prosecution of the perpetrators. AMPED FIVE is very useful also for simple operations, like converting videos or frames and extract snapshots when not allowed by original players. The wide selection of features and the many different applications allows us to get details impossible to see in first instance; I'm completely satisfied by the product, that I've been using daily now for a few years. Congratulations to AMPED for the work done."

Giorgio Bottò, head of counter-crime State Police of Monfalcone, Gorizia, Italy

"Times are changing here at Engine Ears. Originally providing Forensic Audio services to Norwegian law enforcement, lawyers and private customers , we have increasingly been approached by these clients to assist with Video Forensic examination too. We have spent a long time evaluating Forensic Video Software, looking for a combination of powerful tools, ease of use, flexible workflow and most importantly documentation of process. Amped FIVE has a clear GUI, making experimentation fast, comprehensible and most of all repeatable. The continuous development has also brought us many new tools and filters. Amped FIVE has aided us to give quick and accurate answers in high pressure cases as to whether enhancement may work or not. Topped off with fantastic service and support from the main brains at Amped FIVE, you are on to a winner."

Truls Birkeland, Forensic Audio and Video Examiner
Engine Ears

Purchase Information

Flexible solutions to meet customers needs.

Amped FIVE can be purchased directly from one of our offices or through one of our local resellers in your area. Amped FIVE will be sent in a package containing installation DVD, a USB dongle for easy license activation and all the training material.

Material and Licensing

The Amped FIVE package includes:

- ✓ Installation DVD
- ✓ USB copy protection dongle
- ✓ Tutorials and sample project files
- ✓ One year of technical support by email
- ✓ One year of updates online

The standard license is valid for use on one workstation.

Hardware Requirements

Amped Software does not require proprietary hardware or third party software to function. Our minimum configuration standards can be achieved with many current commercial workstations, PCs, and notebook computers. Our suggested configuration for PC version:

- Intel Core 2 Duo or faster
- Minimum of 4 GB of RAM for fast image processing
- 1GB of free space on the hard disk for Amped FIVE program files. You may need more storage depending on the size and type of video files you are working with.
- Windows XP Professional, Windows Vista Professional and Ultimate (x86/x64); or Windows 7 Professional, Ultimate and Enterprise (x86/x64); as well as Windows Server 2003/2008.

Software Maintenance and Support

Amped FIVE's license includes unlimited technical support via email and software upgrades for one year from the date of purchase. It comes with an integrated user manual, a lot of sample projects and step-by-step tutorials on how to utilize FIVE for some of the most common types of cases.

Available Languages

Amped FIVE is in use by investigators and crime labs worldwide and is currently available in English, Spanish, French, Italian, Chinese, Polish, and others available soon. All languages are included in the software and can be switched freely by the user.

Purchase Information: Available editions

Amped FIVE Professional is targeted towards law enforcement investigators and forensic professionals

Amped FIVE Express is a version targeted specifically for tactical and security markets.

Amped FIVE Professional

Amped FIVE Professional is our premier platform. We offer all of the features needed for video and image enhancement and analysis plus the industry leading features of:

- ✓ automatic report generation
- ✓ more advanced image processing functions for video surveillance
- ✓ filters useful for more specific cases, such as crime scene photos and fingerprints
- ✓ measuring functions

Amped FIVE Professional is the premier choice for a busy crime lab or agency that requires high performance features at an attractive price.

Amped FIVE Express

Amped FIVE Express is the version of Amped FIVE focused on quick enhancement of surveillance video. While the core of the software remains the same, Amped FIVE Express offers all the most common functions to cope with CCTV video. Amped FIVE Express provides a great mix of features priced well for security or portable use.

Please contact us for a quote at info@demux.co.uk

Purchase Information: Comparison of available editions

	Professional	Express
All the most common functions for enhancing surveillance videos	Yes	Yes
All the most common functions for enhancing tactical videos	Yes	Yes
The most advanced functions for enhancing any image and video related to forensics and investigations (also fingerprints, crime scene photos...)	Yes	No
Measurement functions	Yes	No
Automatic report generation	Yes	No
Primary usage	Forensics and intelligence	Investigations and security
Integration with VMS	Yes Milestone XProtect® Client included	Yes Milestone XProtect® Client included
Licensing	Portable USB Dongle	Portable USB Dongle
Shipping	Installation DVD USB protection dongle Printable user manual Tutorials and sample projects	Installation DVD USB protection dongle Printable user manual Tutorials and sample projects
Type of license	Perpetual	Perpetual
Support and updates	First year included, additional years available	First year included, additional years available
Perfect fit for	Specialized law enforcement units, forensic labs, intelligence agencies, military use, municipalities	Police tactical units, private security contractors, private investigators, corporate users, municipalities
Pricing	Contact us	Contact us

Purchase Information: Additional Services

Support and Maintenance (SMS)

One year of upgrades and tech support included in the purchase price. Amped FIVE includes technical support via email and software upgrades for the first year after the purchase. Additional years of support plans are available as well and may be purchased at any time. Please inquire for details and pricing.

We offer flexible programs to meet our customer's budget. Renewal of support is not mandatory, so the license purchased is still valid and it can be still used even without a support plan without further obligation. Continued software upgrades and technical support require the purchase of a qualified support plan.

Training

Amped offers training and certification classes on the usage of FIVE. Our training staff is made of Amped Software engineers and working law enforcement professionals that have years of practical experience. Duration and location of the courses may be decided together with customers to best meet the needs of the end-user. Please inquire for our latest training schedules.

Technical Specifications: General Features in FIVE

Feature	Description	Express	Professional
Image Format	Any standard image format (i.e. jpeg, tiff, png, bmp, targa, etc.…).	✓	✓
Video Format	Any standard video format (avi, flv, 3gpp, wmv, mov), also without the need of the codec installed on the system. Expandable by system codecs.	✓	✓
Image Server	Loads surveillance video directly from a Milestone XProtect Server	✓	✓
Capture Playback	Screen capture utility to capture playback from DVR console display or proprietary player to avoid conversion and downscale issues	✓	✓
Proprietary File Conversion	Convert proprietary surveillance video files to a standard AVI format	✓	✓
Print Image	Print generated images.	✓	✓
Report Generation	Automatic generation of a report containing all the scientific methodology and details of the processing steps, settings, and the bibliographic references to the algorithms in HTML format. This reporting feature is a critical advantage for US users working in Frye or Daubert states.		✓
Track Targets or Areas of Interest	Track areas, people, objects through static, dynamic, and custom tracking.	✓	✓
File Verification	Verify alteration of image and video files in saved projects.		✓
File information	Display information about the file formats.		✓
Exif data	Display Exif data contained in digital images.		✓
Hash Code	Display Hash Code specific to saved files		✓
Image information	Display current image morphological and statistical features.	✓	✓
Video playback	Advanced video playback with frame by frame navigation, adjustable frame rate and jog controls.	✓	✓
Visualization	Custom zoom on an area of the image and color space selection.	✓	✓
Supported Languages	Available in English, French, Italian, Spanish, Chinese and Polish (both software and documentation)	✓	✓
Processing Workflow	Instant results: add, configure, move, and modify an unlimited number of filters, in real time even while playing video. With FIVE, you can apply real-time, non-destructive image adjustments that don't require re-rendering as changes are applied.	✓	✓
Samples and tutorial	A rich collection of examples and video lessons to start from basics and face the most common cases.	✓	✓
Supported Platform	PC (Microsoft Windows)	PC	PC
Reference Manual	Internal reference manuals and training tutorials.	✓	✓

Technical Specifications: Filters and Tools in FIVE Version 2012

Filter	Functional Description	Express	Professional
LOAD	**Loads image and video files**		
Image Loader	Loads an image from file	✓	✓
Sequence Loader	Loads a list of images as video	✓	✓
Video Loader	Loads a video from file	✓	✓
Milestone Client	Connects to a Milestone XProtect image server for archive or live feed input	✓	✓
CAPTURE	**Captures images or videos from external devices**		
Image Paster	Saves the image in memory for further processing		✓
Video Input	Live feed and FMV input from various video sources		✓
WRITE	**Writes image and video files**		
Image Writer	Writes the current image to a file	✓	✓
Sequence Writer	Writes all frames as image files	✓	✓
Video Writer	Writes the current video to a file.	✓	✓
Snapshot Tool	Creates a snapshot of the current view or step		✓
SELECT FRAMES	**Selects video frames**		
Single Selector	Selects a single frame of the video	✓	✓
Range Selector	Selects frames of the video within an interval with an optional step	✓	✓
Sparse Selector	Selects a list of frames in random positions		✓
Remove Duplicates	Removes duplicated frames		✓
Auto Selector	Automatically selects similar frames (for discarding bad frames)		✓
I Frames Selector	Select only I frames		✓
Demultiplexer	Separates different scenes multiplexed in the same video		✓
Motion Detection	Fast seek of events in a video		✓
EDIT	**Edits image geometric features.**		
Crop	Crops a region of interest of the image	✓	✓
Flip	Mirrors the image	✓	✓
Rotate	Rotates the image	✓	✓
Resize	Resizes the image (zoom)	✓	✓
Smart Resize	Resizes the image with a smart zoom algorithm		✓
Correct Perspective	Removes the perspective effect on a plane of interest in the image	✓	✓
Deinterlace	Converts interlaced videos into progressive ones	✓	✓
Align Fields	Aligns the two fields of an interlaced frame		✓
Undistort	Corrects the geometric distortion, caused by capturing devices' optics.	✓	✓
Unroll	Converts an omnidirectional image to a panoramic one.		✓

Filter	Functional Description	Express	Professional
CHANNELS	**Color conversion and extraction functions**		
Grayscale Conversion	Converts the image into grayscale	✓	✓
Color Conversion	Converts the image from grayscale to RGB		✓
Color Switch	Exchanges R and B color channels in the image		✓
Extract Channel	Extracts a single channel from the image		✓
Enable Channels	Displays only selected color channels		✓
ADJUST	**Adjusts image values**		
Contrast/Brightness	Adjusts the contrast and brightness values	✓	✓
Exposure	Adjusts the image exposure to correct improper camera settings		✓
Hue/Saturation/Value	Adjusts the hue, the saturation and the color value of the image		✓
Curves	Adjusts the tone values according to the desired curve	✓	✓
Levels	Adjusts intensity and color levels	✓	✓
Histogram Equalization	Improves the image contrast by equalizing the histogram of its values	✓	✓
Contrast Stretch	Improves the image contrast by expanding the range of intensity values		✓
EXTRACT	**Extracts and analyzes image features.**		
Negative	Negative of the image		✓
Threshold	Cuts image values to the desired threshold(s)		✓
Adaptive Threshold	Extracts edges with adaptive threshold algorithm.		✓
Laplace	Extracts the edges with a Laplacian filter		✓
Sobel	Extracts the edges with a Sobel filter		✓
Scharr	Extracts the edges with a Scharr filter		✓
Canny	Extracts the edges with a Canny filter		✓
Linear Filter	Filters the image with a user-defined kernel.		✓
Channel Mixer	Mixes the ratio of color in every channel		✓
Color Deconvolution	Maximizes the differences between specific colors in the image.		✓
Component Separation	Separates different informative components in an image		✓
Fourier	Removes periodic noise, backgrounds and interferences in the Fourier domain		✓
VERIFY FILE	**Verifies digital image and video files**		
File Info (EXIF Data)	Saves file information and EXIF metadata from the original media in the Amped FIVE report		✓
Hash Code	Calculates input file hash code and check integrity loading the project		✓
MEASURE	**Extracts real-world measurements from the image**		

Filter	Functional Description	Express	Professional
Measure 1d	Takes a measure on the planar image in 1 dimension		✓
Measure 2d	Takes a measure on planar image after perspective correction in 2 dimensions		✓
Measure 3d	Takes a measure on the image with a 3d reconstruction model of the perspective		✓
SHARPEN	**Enhances image details.**		
Laplacian Sharpening	Sharpens the image using a Laplacian filter.	✓	✓
Unsharp Masking	Sharpens the image using unsharp masking filter.	✓	✓
DENOISE	**Reduces the image noise.**		
Averaging Filter	Smooths the image with an averaging filter.	✓	✓
Gaussian Filter	Smooths the image with a Gaussian filter.	✓	✓
Bilateral Filter	Smooths the image with a bilateral Gaussian filter.		✓
Median Filter	Reduces the impulsive noise with a median filter.	✓	✓
Wiener Filter	Smooths the image with a Wiener filter		✓
Deblocking	Reduces block artifacts from lossy compression.	✓	✓
DEBLURRING	**Reduces image blurring**		
Motion Deblurring	Corrects the blur of moving objects	✓	✓
Optical Deblurring	Corrects the blur of objects which are out of focus (big blur)	✓	✓
Nonlinear Deblurring	Corrects the blur caused by nonlinear motion		✓
Blind Deconvolution	Corrects the blur of objects out of focus with blind deconvolution (little blur)		✓
Turbulence Deblurring	Corrects the blur caused by air turbulence at long distances		✓
STABILIZATION	**Stabilizes video frames**		
Local Stabilization	Stabilizes a shaking video keeping steady the current selection	✓	✓
Global Stabilization	Stabilizes the overall scene of a shaking video		✓
Perspective Registration	Aligns the perspective of different images of the same object, taken from different points of view.		✓
INTEGRATE	**Enhances image by multiple frames**		
Temporal Smoothing	Reduces the noise integrating current and previous frames		✓
Motion Smoothing	Reduces the noise integrating current and previous frames and avoiding halos on moving objects		✓
Frame Averaging	Reduces the noise by creating an image which is the average of all the frames	✓	✓
Super Resolution	Merges all frames to improve the resolution of the image		✓
PRESENTATION	**Prepares a video or image for presentation**		

Filter	Functional Description	Express	Professional
Write Timestamp	Indicate date and time for the current frame		
Hide Selection	Pixelizes, darkens or blurs an area of interest in a video (witness protection)		✓
Spotlight	Adds a spotlight effect to a selection		✓
Compare Original	Juxtaposes or overlays original and enhanced image for comparison	✓	✓
Load Subtitles	Displays content from embedded subtitle files on the video frame		✓

All local filters support the applications to the whole image, a static region or the tracking of a moving object with either static or dynamic template.

About Us

Amped Software: The Forensic Image Processing Company.

Amped Software develops software for the analysis and enhancement and authentication of images and video for forensic, security and investigative applications. With strategic partners across the world, we strive to exceed the ever-evolving requirements and anticipate the needs of our customers. Amped Software was created out one clear and profound vision: "To be the world's premier creator of forensic image analysis software".

Amped was founded in 2008 by experienced engineers working with the Image Processing Laboratory at the University of Trieste, Italy, with the single mission to create software that every forensic video analyst would dream of, the one stop shop for any image and video processing need related to security and investigations. As working forensic scientists, we did not find one single product that met all of our needs. We found that products offered were a compromise of features or were incomplete and required other software to accomplish common tasks. Since nothing met our standards, we decided to create Amped FIVE as an uncompromising product. Since its inception, Amped has been recognized as an innovator in the national and international arena. In 2008, barely a year from its founding, Amped was awarded the best Italian start-up at the Tech Garage business competition, held during SMAU trade-show. In 2010 Amped has been presented in the book "Winning Italy: Almanac of Italian Excellence" by the Ministry of Foreign Affairs, which highlights significant innovation and achievements by Italian companies and individuals. Amped was highlighted as a leader in scientific accomplishments in a world class group which featured prominent companies such as Ferrari and senior "Big Bang" CERN researcher, Lucio Rossi.

Amped FIVE, our flagship product, is used by government agencies, forensic labs and security companies worldwide. Amped experts have worked on hundreds of case, some of which of national and international importance.

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